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DECORATIVE FACING MATERIALS BASED ON INDUSTRIAL WASTE

E. K. Mamedov[1]

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A technology is proposed for recycling lead automobile storage batteries and using them in production of various facing materials which can be used in interior and exterior decoration, production of multicolored tiles, etc.

A technology has been developed for producing decorative facing materials based exclusively on recycled materials: cullet, certain lead compounds, and pigment agents. The lead compounds are obtained from automobile storage batteries which are unfit for further service. The coloring agents which impart different tints to the materials are based on wastes of copper, iron, tungsten, and their oxide compounds [1, 2].

The proposed technology for producing decorative facing materials offers advantages over the available production methods.

The current technology for producing decorative materials either employs only virgin materials, or virgin materials in combination with waste. The proposed technology is fully based on the utilization of industrial waste, without using virgin raw materials.

The technology is an environment-friendly process. The employed waste, for example $PbSO_4$ in combination with other compounds, decomposes inside the vitreous mixture. The release of SO_3 (or SO_2 when glass is melted in reducing conditions) into the working space virtually does not happen.

Preference is given to electric glass melting, rather than other commonly used energy sources (gas or mazut). The main reasons for this choice are a need to decrease the pollution of ambient environment, shortage of fuel sources, and better service conditions of electric furnaces.

The proposed technology is energy-saving (the glass-melting temperature is 1000 – 1100°C, which is lower than the temperatures 1400 – 1550°C commonly used in the current technologies).

The technology allows for the utilization of all components of spent automobile storage batteries, along with other industrial wastes, such as cullet and metals.

Since a great number of worn automobile batteries are not recycled and thus contaminate the environment, the proposed technology can be of interest for environment specialists, as well as for the managers of companies producing facing materials.

[1] Radiation Research Sector of the Academy of Sciences of Azerbaidzhan, Baku, Azerbaidzhan.

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